

## PATENT ABSTRACTS OF JAPAN

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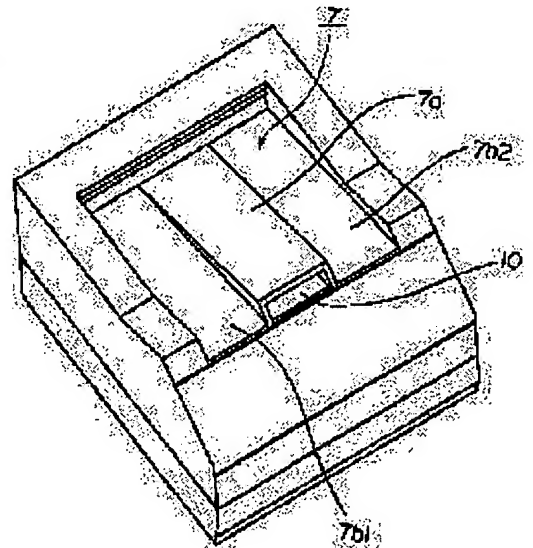
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## (54) DISCHARGED SHEET STACKER AND IMAGE FORMING DEVICE

## (57)Abstract:

**PROBLEM TO BE SOLVED:** To provide a discharged sheet stacker mitigating the temperature rise of a device body inside by providing a discharge sheet stack part with a heat radiation structure and radiating the heat of the device body inside simultaneously with radiating the heat of a discharged sheet and provide an image forming device provided therewith.

**SOLUTION:** This discharged sheet stacker stacking the discharged sheets is provided with a discharged sheet stack surface 7a supporting the discharged sheets and device upper exterior surfaces 7b1 and 7b2 supporting no sheet, and characterized in forming a space between the sheet surface supported to the discharge sheet stack surface 7a and the device upper exterior surfaces 7b1 and 7b2.



## LEGAL STATUS

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CLAIMS

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[Claim(s)]

[Claim 1] Eccrisis sheet loading equipment characterized by constituting so that space may be generated between the sheet sides and the aforementioned non-supporters which have the supporter which supports the discharged sheet in the eccrisis sheet loading equipment loading the discharged sheet, and the non-supporter which does not support the aforementioned sheet, and were supported by the aforementioned supporter.

[Claim 2] Eccrisis sheet loading equipment according to claim 1 characterized by preparing the exhaust hole for missing the heat inside the main part of equipment in the edge of the aforementioned supporter.

[Claim 3] Eccrisis sheet loading equipment according to claim 1 characterized by preparing a sub eccrisis tray in the edge of the aforementioned supporter.

[Claim 4] Eccrisis sheet loading equipment according to claim 3 characterized by forming the stopper which carries out guide regulation of the sheet discharged by the edge of the aforementioned sub eccrisis tray.

[Claim 5] The aforementioned sub eccrisis tray is eccrisis sheet loading equipment according to claim 3 or 4 characterized by attachment and detachment or frequent appearance being possible to the main part of equipment.

[Claim 6] The aforementioned non-supporter is eccrisis sheet loading equipment given in any 1 term of the claim 1 arranged rather than the aforementioned supporter in the low position, or a claim 5.

[Claim 7] Either [ at least ] the aforementioned non-supporter or a supporter is eccrisis sheet loading equipment given in any 1 term of the claim 1 arranged at two or more places, or a claim 6.

[Claim 8] Image formation equipment characterized by having eccrisis sheet loading equipment the image formation means for forming a picture in a sheet, the eccrisis means for discharging the sheet after image formation, and given in the claim 1 for loading the discharged sheet, or any 1 term of a claim 7 in the image formation equipment which formed the picture in the sheet, and to discharge.

[Claim 9] Image formation equipment according to claim 8 characterized by having the fixing means which carries out heating fixing of the sheet by which image formation was carried out [ aforementioned ].

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## DETAILED DESCRIPTION

[Detailed Description of the Invention]

[0001]

[The technical field to which invention belongs] this invention relates to image formation equipments used as an output unit of the computer equipped with the sheet loading equipment and this which radiate heat in the heat emitted [ especially ] from a sheet about image formation equipment equipped with the eccrisis sheet loading equipment and this loading the discharged sheet, and can ease the temperature rise in equipment, such as a printer and a copying machine.

[0002]

[Description of the Prior Art] The conventional example is explained for a laser beam printer for an example, using drawing 9 and drawing 10 as image formation equipment.

[0003] Drawing 9 is cross-section explanatory drawing of the main part of image formation equipment, and drawing 10 is appearance tropia explanatory drawing of the main part of a printer.

[0004] In drawing 9, record sheet P set to the equipment lower part is conveyed in the shape of S character with a roller 100, and a toner image is imprinted by record sheet P with an electrophotography method in the image formation means 101 in the meantime. The sheet is discharged to the eccrisis sheet loading section 103 of the equipment upper part, after heating fixing of the aforementioned toner image is carried out by it being conveyed by fixing equipment 102 and heat and a pressure being impressed.

[0005] The eccrisis sheet loading section in such a printer is formed in the upper part of the main part 104 of equipment at one larger flat surface than sheet width of face, and depending on the model, when sheet size is large, it consists of sub eccrisis trays holding a sheet nose of cam etc.

[0006]

[Problem(s) to be Solved by the Invention] however, since in the case of the above-mentioned conventional technology the sheet heated by fixing equipment 102 continued on the eccrisis sheet loading section and was accumulated one by one when performing image formation continuously, it was accumulated in the sheet bunch S2 -- there is a possibility that heat may raise the ambient temperature of the main part inside of equipment through the eccrisis sheet loading section 103

[0007] Then, the purpose of this invention radiates heat in the heat in the main part of equipment, and offers image formation equipment equipped with the eccrisis sheet loading equipment and this which can make the temperature up inside the main part of equipment ease at the same time it gives thermolysis structure to the eccrisis sheet loading section and makes the heat of the discharged sheet radiate heat.

[0008]

[Means for Solving the Problem] The typical composition concerning this invention for attaining the above-mentioned purpose has the supporter which supports the discharged sheet, and the non-supporter which does not support the aforementioned sheet, and is characterized by to constitute so that space may be generated between the sheet sides and the aforementioned non-supporters supported by the aforementioned supporter in the eccrisis sheet loading equipment loading the discharged sheet.

[0009] If it is in the above-mentioned composition, though the sheet is carrying out accumulation, the heat radiates heat from the space between a sheet side and a non-supporter, and the heat in the main part of equipment also radiates heat. For this reason, the temperature rise inside the main part of equipment can be made to ease.

[0010]

[Embodiments of the Invention] Hereafter, the gestalt of operation of this invention is explained based on a drawing.

[0011] The [1st operation gestalt] Drawing 1 is cross-section explanatory drawing of the image formation equipment concerning the gestalt of the 1st operation, and this operation gestalt explains it taking the case of the printer of a laser-beam method as image formation equipment.

[0012] This printer is equipped with the feed cassette with which the lower part of the main part 2 of equipment is equipped free [ attachment and detachment ], the sheet feed section, an image formation means, and the sheet ejection section, and the ejection sheet loading section 7 loading the sheet which image formation was carried out and was discharged is formed in the upper surface section of the main part 2 of equipment.

[0013] The scanner unit 39, the process cartridge 36, the imprint roller 38, and the fixing means consist of a fixing roller 40 and a pressurization roller 41 for the image formation means.

[0014] The interior of a process cartridge 36 is equipped with the developing roller which is not illustrated centering on the photo conductor drums 37 including a toner, the electrification roller, the cleaner, etc. This process cartridge is equipped free [ attachment and detachment ] from opening of the upper surface of the main part 2 of equipment, and opening can be freely opened and closed by the cartridge door 5 which rotates focusing on a hinge 6.

[0015] As shown in drawing 2, the ejection sheet loading sections 7 are the equipment top sheathing side (sheet non-supporter) seven b1 of two located in sheet loading side (sheet supporter) 7a located in this one center of ejection sheet loading section 7 simultaneously, and the sheet cross direction (direction which intersects perpendicularly with sheet ejection direction) ends of the ejection sheet loading section 7, and seven b2, are fabricated by one by resin material and constituted.

[0016] Here, when an ejection sheet is loaded into ejection sheet loading side 7a, ejection sheet loading side 7a, the equipment top sheathing side seven b1, and seven b2 are arranged rather than ejection sheet loading side 7a in the low position, respectively, so that space may be vacant between the equipment top sheathing side seven b1, and seven b2 and the inferior surface of tongue of a sheet bunch. Moreover, the exhaust heat duct (exhaust hole) 10 is formed at the nose of cam for a center section of the ejection sheet loading section.

[0017] Next, an operation of the gestalt of operation of \*\*\*\* 1 is explained. In drawing 1, record sheet P currently loaded into the feed tray 31 is taken up by the feed roller 32, it separates into one sheet at a time, and only record sheet P of the most significant is conveyed, and with the separation pad 33, meets a guide 34 and is conveyed by resist roller pair 35a and 35b. Then, in accordance with rotation of the electrophotography photo conductor drum 37 arranged in the process cartridge 36 used as a record means, record sheet P is conveyed with a resist roller, and the toner image on the photo conductor drum 37 is imprinted on record sheet P with the imprint roller 38. This toner image is made by making the latent image of image data on a drum 37 by the up laser-scanner unit 39, and flying a toner to this. After that, record sheet P is guided to the conveyance guide 45 and the entrance guide 46, and it is heated and pressurized with the fixing roller 40 and the pressurization roller 41, and is fixed to the toner image on record sheet P as a permanent image. Then, record sheet P is conveyed along with the ejection conveyance guide rib 42, and ejection loading is carried out by ejection roller pair (ejection means) 43a and 43b on ejection sheet loading side 7a.

[0018] Here, the sheet immediately after passage of the fixing roller 40 has 80-100 degrees C and an elevated temperature, and it has 60-70-degree C heat also immediately after discharging on the ejection sheet loading section. On the usual print of about 2-3 sheets, although the open air is touched and temperature falls to ordinary temperature gradually, dozens of sheets after ejection are printed continuously, and when loading on the ejection sheet loading section, they are accumulated inside the sheet bunch S2, without emitting the heat of each sheet.

[0019] Although this heat is transmitted to the cartridge door 5 and each upper surface section of ejection sheet loading side 7a The heat of the sheet of the equipment top sheathing side [ where the sheet by which ejection loading was carried out does not contact ] seven b1, and portion top of seven b2 Heat is radiated by the open air layer, it is hard to be transmitted to a process cartridge 36 and the scanner unit 39 indifferent, and the temperature rise of the process cartridge 36 and the scanner unit 39 which are located directly under the cartridge door 5 and ejection sheet loading side 7a can be stopped.

[0020] Next, other operation gestalten of this invention are explained. The gestalt of each following operation shall be what changed a part of previous 1st operation gestalt, shall explain hereafter the portion which is mainly different from the gestalt of the 1st operation, shall attach the sign same about the same portion as the gestalt of the 1st operation, and shall omit explanation.

[0021] The [2nd operation gestalt] Drawing 3 is appearance explanatory drawing of the image formation equipment concerning the 2nd operation gestalt. The ejection sheet loading sections 7 are two ejection sheet loading sides seven a1 located in equipment top sheathing side 7b mostly located in the one center of the sheet cross direction, and the ends of the ejection sheet loading section 7, and seven a2, are fabricated by one by resin material and constituted.

[0022] Here, when an ejection sheet is loaded into the ejection sheet loading side seven a1 and seven a2, the ejection sheet loading side seven a1, and seven a2 and equipment top sheathing side 7b are arranged, respectively, so that space may be vacant between equipment top sheathing side 7b and the inferior surface of tongue of a sheet bunch.

Furthermore, the exhaust heat ducts 10a and 10b are formed at the ejection sheet loading side seven a1 and the nose of cam of seven a2.

[0023] Also in the above-mentioned composition, like the 1st operation gestalt, the heat of a sheet bunch can radiate heat and the temperature rise inside a main part can be stopped by the space of the sheet bunch inferior surface of tongue and the non-loading field which were discharged.

[0024] The [3rd operation gestalt] Drawing 4 is appearance explanatory drawing of the image formation equipment concerning the 3rd operation gestalt. In the eccrisis sheet loading section of the 1st and the 2nd operation gestalt which were mentioned above, since sheet maintenance of the predetermined portion of an eccrisis sheet bunch is not carried out, with a soft sheet and a thin sheet, it is distorted or there is a possibility that it cannot load finely. Then, with this operation gestalt, a predetermined interval is separated to the equipment top sheathing side seven b1 which is the non-loading section of an eccrisis sheet, and seven b2, and height arranges two or more same rib 7c as eccrisis sheet loading side 7a as a supporter.

[0025] Thereby, an inferior surface of tongue is supported by eccrisis sheet loading side 7a and rib 7c, and the discharged sheet is discharged, without being distorted even if it is a thin sheet.

[0026] Thus, you may arrange two or more supporters and non-supporters.

[0027] The [4th operation gestalt] Drawing 5 is appearance explanatory drawing of the image formation equipment concerning the 4th operation gestalt. This operation gestalt is the composition of having formed the sub eccrisis tray 11 holding the discharged sheet nose of cam at the nose of cam of a sheet cross direction center-section part of the eccrisis sheet loading section in the 1st operation gestalt (refer to drawing 1 and drawing 2 ) mentioned above. Drawing 6 is tropia explanatory drawing which looked at the state of a printer where the sheet bunch had ridden on eccrisis sheet loading side 7a, from under slant.

[0028] Here, the heat of a sheet bunch radiates heat from the equipment top sheathing side seven b1 and the inferior surface of tongue of seven b2 and the sheet bunch S2. Moreover, the heat inside the main part of equipment radiates heat from the lower part of the sub eccrisis tray 11.

[0029] Moreover, a main part can be made compact if the receipt of the sub eccrisis tray 11 in the lower part of eccrisis sheet loading side 7a is enabled as shown in drawing 7 . In addition, drawing 7 is appearance explanatory drawing of the image formation equipment in which the state where the sub eccrisis tray 11 was contained is shown.

[0030] The [5th operation gestalt] Drawing 8 is appearance explanatory drawing of the image formation equipment concerning the 5th operation gestalt of this invention. This operation gestalt prepares eccrisis stopper 11a which carries out guide regulation of the nose of cam of the discharged sheet at the nose of cam of the sub eccrisis tray 11 of the 4th operation gestalt, and enables the receipt of this sub eccrisis tray 11 in the lower part of eccrisis sheet loading side 7a.

[0031] While radiating heat in the heat of the sheet bunch S2 on the eccrisis sheet loading section 7, without spoiling the eccrisis alignment nature of an eccrisis sheet by making it the above composition, heat can be radiated in the heat inside the main part of equipment, and the temperature rise of a process cartridge 36 or a laser scanner 39 can be stopped.

[0032] Operation gestalt] besides [ Although each operation gestalt mentioned above explained the image formation equipment of the type which formed the eccrisis sheet loading section 7 in the upper part of the main part of equipment to the example, you may prepare the same composition to the side by the type which carries out eccrisis loading, and the type which carries out eccrisis loading into the drum of a main part like the printer of not only the upper part of an equipment main part but a vertical form conveyance path.

[0033] Moreover, although the operation gestalt mentioned above showed the example using the image formation method by the electrophotography process as an image formation means, when other recording methods, such as an ink jet and thermal transfer recording, are used and it carries out heating eccrisis of the sheet, the eccrisis sheet loading equipment of this invention can be used suitably.

[0034]

[Effect of the Invention] Since this invention was constituted as mentioned above, though the sheet is carrying out accumulation, the heat radiates heat from the space between a sheet side and a non-supporter, and the heat in the main part of equipment also radiates heat. For this reason, the temperature rise inside the main part of equipment can be made to ease.

[0035] Furthermore, if a sub eccrisis tray is prepared, while holding the nose of cam of the discharged sheet, heat can be radiated and equipment can also make the heat inside a main part compact.

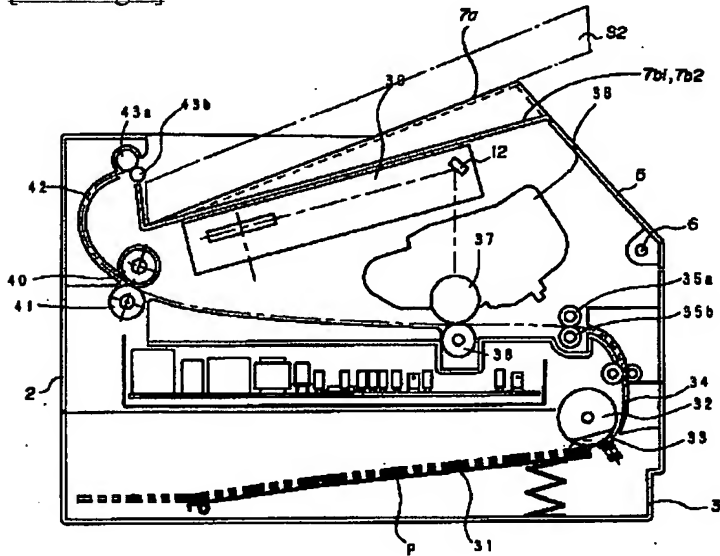
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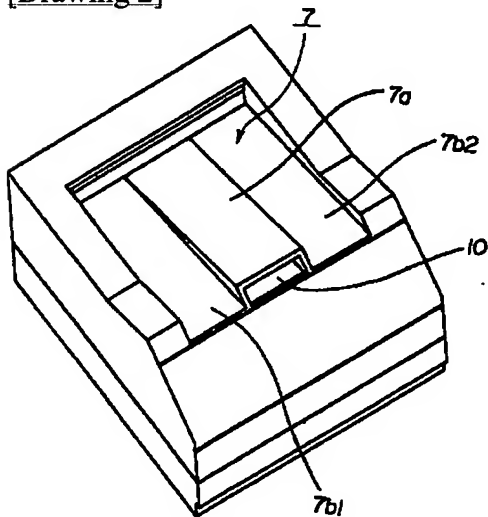
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## DRAWINGS

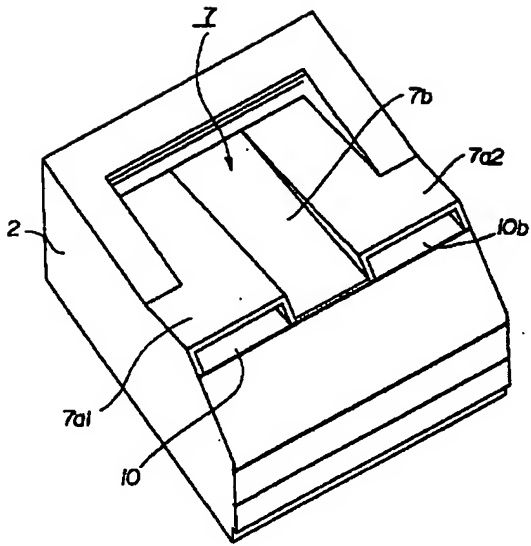
[Drawing 1]



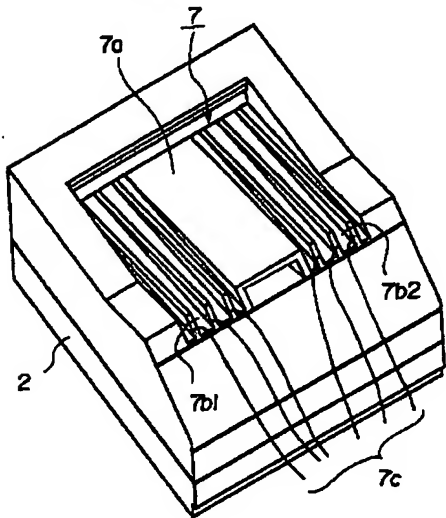
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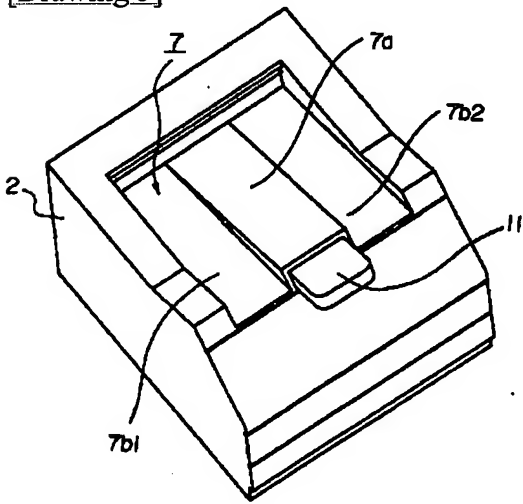
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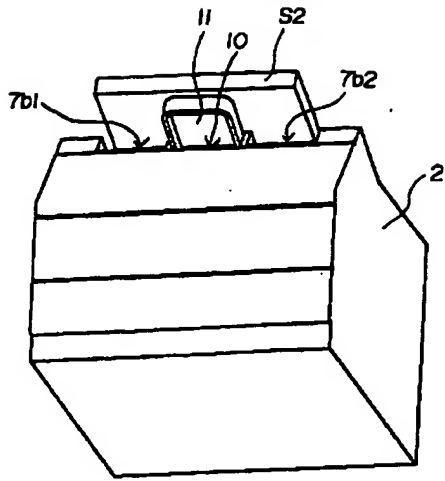
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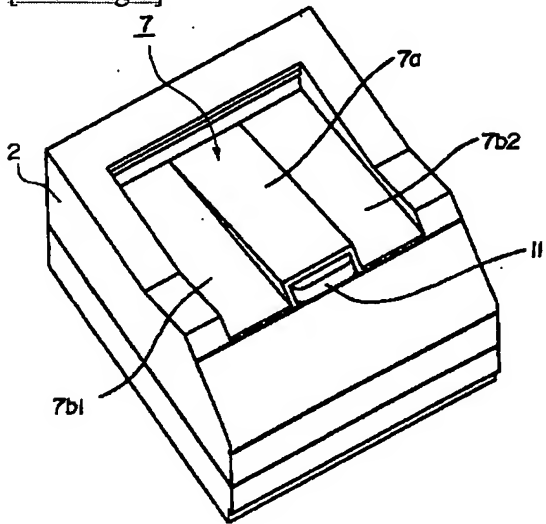
[Drawing 5]



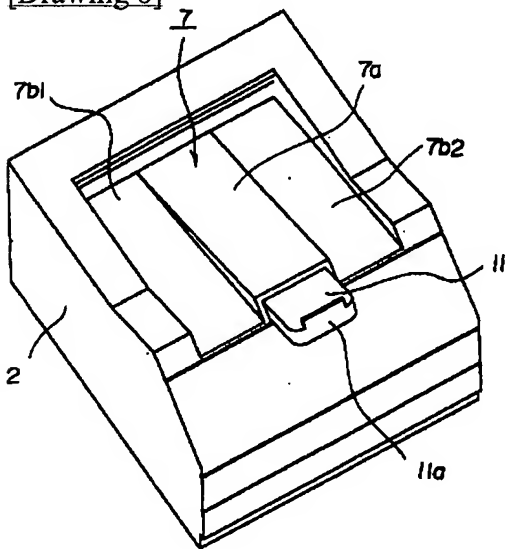
[Drawing 6]



[Drawing 7]

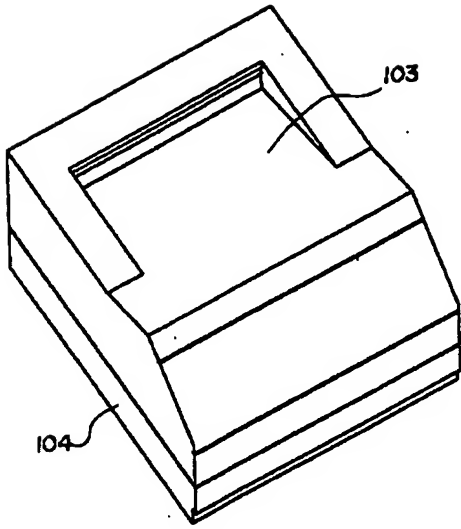


[Drawing 8]

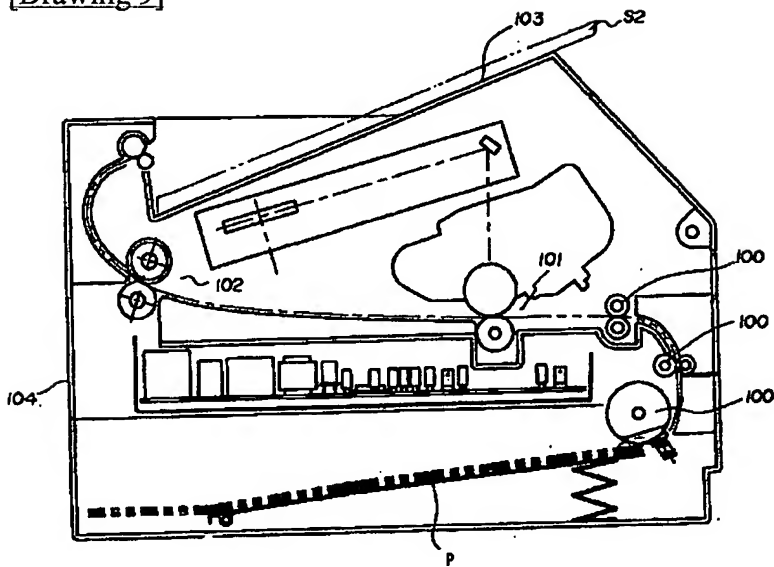


[Drawing 10]





[Drawing 9]



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